

# **METHODS AND SYSTEMS FOR FILTERING UNWANTED NOISE IN A MATERIAL METERING MACHINE**

## **ABSTRACT**

Methods and systems for filtering an analog signal sampled at a very high frequency and outputting a digital signal that has a very low sampling frequency to drive a material metering machine. The high frequency digital input signal is input to a first decimation element, which filters out the noise in the signal introduced by an analog-to-digital (A/D) converter and reduces the sampling frequency of the digital signal to a lower sampling frequency of 1200 hertz. The reduced rate digital signal is input into a second decimation element that contains several decimation filters, which reject the 60 hertz line noise and its harmonics while simultaneously reducing the sampling frequency of the digital signal to 10 hertz. The output of the second decimation element is then passed to a bank of selectable filters with sub-hertz cutoff frequencies to remove the machine noise from the material metering machine.